

What is claimed is:

CLAIMS

- 5     1.     A method comprising:  
partitioning data into segments of the data;  
storing in memory a set of checksums of the segments of the data;  
selecting a portion of the data, the portion of the data comprising at least one of a  
subset of the segments of the data and at least one part of at least one segment of the data;  
10    and  
determining a checksum of the portion of the data, the checksum of the portion of  
the data being determined, based, at least in part, upon at least one of a checksum of the  
subset of the segments of the data and a checksum of the at least one part of the at least  
one segment of the data, the checksum of the subset of the segments of the data being  
15    based, at least in part, upon respective checksums, read from the set of checksums stored  
in the memory, of segments of the data comprised in the subset of the segments of the  
data.
2.     The method of claim 1, wherein:  
20     the method further comprises determining, based at least in part upon the  
checksum of the portion of the data, a checksum of the packet;  
the selecting of the portion of the data is based, at least in part, upon a size of a  
packet; and  
the packet comprises the portion of the data and the checksum of the packet.  
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3.     The method of claim 2, wherein:  
the size of the packet is selected based, at least in part, upon one or more flow  
control parameters.
- 30    4.     The method of claim 3, wherein:

the one or more flow control parameters are based, at least in part, upon one or more of the following: a level of network congestion, a maximum packet size, and a maximum data transfer amount.

- 5     5.     The method of claim 4, wherein:  
              the checksum of the packet comprises a transmission control protocol (TCP)  
              segment checksum; and  
              the one or more flow control parameters indicate, at least in part, status of a TCP  
              connection.
- 10     6.     The method of claim 1, wherein:  
              each of the segments of the data has an identical respective size equal to N bytes;  
              the data has a size equal to M bytes; and  
              the set of checksums includes a number of checksums equal to twice the quotient  
              of M divided by N.
- 15     7.     The method of claim 1, the method further comprising:  
              storing the segments of the data in computer-readable memory;  
              determining the checksum of the at least one part of the at least one segment of  
              the data; and  
              contemporaneously, at least in part, with the determining of the checksum of the  
              at least one part of the at least one segment of the data, at least one of:  
                      reading, at least in part, the at least one part of the at least one segment of  
                      the data from the computer-readable memory; and  
                      storing, at least in part, the at least one part of the at least one segment of  
                      the data in another computer-readable memory.
- 20     8.     An apparatus comprising:  
              circuitry that is capable of:  
                      partitioning data into segments of the data;  
                      storing in memory a set of checksums of the segments of the data;
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selecting a portion of the data, the portion of the data comprising at least one of a subset of the segments of the data and at least one part of at least one segment of the data; and

determining a checksum of the portion of the data, the checksum of the  
5 portion of the data being determined, based, at least in part, upon at least one of a checksum of the subset of the segments of the data and a checksum of the at least one part of the at least one segment of the data, the checksum of the subset of the segments of the data being based, at least in part, upon respective checksums, read from the set of checksums stored in the memory, of segments of the data comprised in the subset of the  
10 segments of the data.

9. The apparatus of claim 8, wherein:

the circuitry is also capable of determining, based at least in part upon the checksum of the portion of the data, a checksum of the packet;

15 the circuitry is also capable of selecting of the portion of the data based, at least in part, upon a size of a packet; and

the packet comprises the portion of the data and the checksum of the packet.

10. The apparatus of claim 9, wherein:

20 the circuitry is also capable of selecting the size of the packet based, at least in part, upon one or more flow control parameters.

11. The apparatus of claim 10, wherein:

25 the one or more flow control parameters are based, at least in part, upon one or more of the following: a level of network congestion, a maximum packet size, and a maximum data transfer amount.

12. The apparatus of claim 11, wherein:

30 the checksum of the packet comprises a transmission control protocol (TCP) segment checksum; and

the one or more flow control parameters indicate, at least in part, status of a TCP connection.

13. The apparatus of claim 8, wherein:

- 5 each of the segments of the data has an identical respective size equal to N bytes;  
the data has a size equal to M bytes; and  
the set of checksums includes a number of checksums equal to twice the quotient of M divided by N.

10 14. The apparatus of claim 8, wherein:

the circuitry is also capable of storing the segments of the data in computer-readable memory, determining the checksum of the at least one part of the at least one segment of the data, and contemporaneously, at least in part, with the determining of the checksum of the at least one part of the at least one segment of the data, at least one of:

- 15 reading, at least in part, the at least one part of the at least one segment of the data from the computer-readable memory; and  
storing, at least in part, the at least one part of the at least one segment of the data in another computer-readable memory.

20 15. An article comprising:

a storage medium that stores instructions that when executed by a machine result in the following:

- partitioning data into segments of the data;  
storing in memory a set of checksums of the segments of the data;  
25 selecting a portion of the data, the portion of the data comprising at least one of a subset of the segments of the data and at least one part of at least one segment of the data;  
and  
determining a checksum of the portion of the data, the checksum of the portion of the data being determined, based, at least in part, upon at least one of a checksum of the  
30 subset of the segments of the data and a checksum of the at least one part of the at least one segment of the data, the checksum of the subset of the segments of the data being

based, at least in part, upon respective checksums, read from the set of checksums stored in the memory, of segments of the data comprised in the subset of the segments of the data.

- 5     16.     The article of claim 15, wherein:  
               the instructions when executed by the machine also result in determining, based at  
               least in part upon the checksum of the portion of the data, a checksum of the packet; and  
               the selecting of the portion of the data is based, at least in part, upon a size of a  
               packet; and  
 10            the packet comprises the portion of the data and the checksum of the packet.

17.     The article of claim 16, wherein:  
               the size of the packet is selected based, at least in part, upon one or more flow  
               control parameters.

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18.     The article of claim 17, wherein:  
               the one or more flow control parameters are based, at least in part, upon one or  
               more of the following: a level of network congestion, a maximum packet size, and a  
               maximum data transfer amount.

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19.     The article of claim 18, wherein:  
               the checksum of the packet comprises a transmission control protocol (TCP)  
               segment checksum; and  
               the one or more flow control parameters indicate, at least in part, status of a TCP  
 25            connection.

20.     The article of claim 15, wherein:  
               each of the segments of the data has an identical respective size equal to N bytes;  
               the data has a size equal to M bytes; and  
 30            the set of checksums includes a number of checksums equal to twice the quotient  
               of M divided by N.

21. The article of claim 15, wherein the instructions when executed by the machine also result in:

- storing the segments of the data in computer-readable memory;
- 5 determining the checksum of the at least one part of the at least one segment of the data; and
- contemporaneously, at least in part, with the determining of the checksum of the at least one part of the at least one segment of the data, at least one of:
  - reading, at least in part, the at least one part of the at least one segment of
  - 10 the data from the computer-readable memory; and
  - storing, at least in part, the at least one part of the at least one segment of the data in another computer-readable memory.

22. A system comprising:

- 15 a circuit board that includes a circuit card slot; and
- a circuit card that is capable of being coupled to the circuit board via the circuit card slot, the circuit card including circuitry that is capable of:
  - partitioning data into segments of the data;
  - storing in memory a set of checksums of the segments of the data;
  - 20 selecting a portion of the data, the portion of the data comprising at least one of a subset of the segments of the data and at least one part of at least one of the segments of the data; and
  - determining a checksum of the portion of the data, the checksum of the portion of the data being determined, based, at least in part, upon at least one of a
  - 25 checksum of the subset of the segments of the data and a checksum of the at least one part of the at least one of the segments of the data, the checksum of the subset of the segments of the data being based, at least in part, upon respective checksums, read from the set of checksums stored in the memory, of segments of the data comprised in the subset of the segments of the data.

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23. The system of claim 22, wherein:

the circuit board includes a host processor and a bus that couples the host processor to the circuit card slot; and

when the circuit card is coupled to the circuit board via the circuit card slot, the circuit card is coupled to the host processor via the bus.

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24. The system of claim 23, wherein:

the circuit card includes computer-readable memory to store the data and at least one buffer memory to store the at least one part of the at least one of the segments of the data.

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25. The system of claim 23, wherein:

the circuit board includes host memory that is capable of storing the data;

the circuit card includes computer-readable memory; and

when the circuit card is coupled to the circuit board via the circuit card slot, the

15 circuitry is capable of receiving the data from the host memory and storing the data in the computer-readable memory.

26. The system of claim 25, wherein:

the circuitry is also capable of generating a transmission control protocol (TCP)

20 packet that comprises the portion of the data and the checksum of the portion of the data.

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